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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,306	07/30/2001	Jun Koyama	12732-059001	8263

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EXAMINER

EISEN, ALEXANDER

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 10/02/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/916,306

Applicant(s)

KOYAMA, JUN

Examiner

Alexander Eisen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 21 is objected to because of the following informalities: in line 4 “where $2 \leq n$ ” apparently should be “where $2 \leq n$ ”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 51 and 55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims recite “stopping the source signal line driver circuit by repeatedly reading the n-bit digital image signal store in the storage circuit to display the still image”. There is no apparent connection between the stopping of the source signal line driver and repeatedly reading the image signal from the storage circuit. This render claims indefinite and confusing.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Parks, US 5,471,225 (see IDS submission).

With respect to claim 1 Parks discloses a liquid crystal display device having a plurality of pixels (36), wherein the plurality of pixels have a plurality of storage circuits (52, 54).

As to claim 2, the storage circuit of Parks constitutes a static memory (col. 4, lines 17-20).

As to claim 4, Parks teaches DRAM circuits associated with pixels (see col. 1, ll. 61-62).

As to claim 5, the storage circuits are formed on a glass substrate (24; see also col. 6, lines 36-43).

7. Claims 11, 12 and 58 are rejected under 35 U.S.C. 102(b) as being anticipate by Kanaly, US 5,225,823.

With respect to claim 11 Kanaly discloses a liquid crystal display device having a plurality of pixels, wherein the plurality of pixels respectively have 8x3 storage circuit for storing 3 frames of an 8-bit digital signal image for three colors.

As to claim 12, Kanaly teaches static memory, such as shift registers (52).

As to claim 58, the number of frame stored $m = 3$ (i.e. $m > 1$).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parks in view of Yamazaki et al., ("Yamazaki"), US 5,349,366 (see IDS).

Parks discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

Parks does not disclose that ferroelectric memory can be used in the storage circuits.

Yamazaki teaches a storage circuit for LCD employing ferroelectric type of memory.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that the memory taught by Yamazaki can be applied for the storage devices of Park, because it would allow rewriting only specified pixels as taught by Yamazaki and would also simply constitute an alternative choice of memory component in the pixel.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parks in view of Fonash et al., ("Fonash"), US 5,945,866.

Parks discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

While Parks discloses that the circuits can be made on a glass substrate, it does not teach that a plastic substrate can be used instead.

Fonash teaches that the circuit of LCD can be made on either glass or plastic substrates.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that either substrate, glass and plastic, can be used for manufacturing the circuits, which will be readily recognized by those ordinary skilled in the art as an alternative material choice for manufacturing.

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11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parks in view of Johnson, US 4,752,118.

Parks discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

Parks does not teach that the components of LCD can be manufactured using stainless steel substrate.

Johnson teaches that the semiconductor circuits, including those for LCD, can be made using stainless steel substrates.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that any known type of substrate, stainless steel including, can be used for manufacturing the memory circuit of liquid crystal display device of Parks, it would be readily recognized by those ordinary skilled in the art as an alternative choice of material for manufacturing.

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parks in view of Kobayashi et al., ("Kobayashi"), US 4,432,610.

Parks discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

While Parks discloses that the circuits can be made on a glass substrate, it does not teach that a monocrystalline wafer substrate can be also used for that purpose.

Kobayashi teaches that the memory circuit for LCD can be made on monocrystalline wafer substrate (col.

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It would have been obvious to one of ordinary skill in the art at the time when the invention was made that monocrystalline wafer substrate can be used for manufacturing the memory circuits of Parks. This fact will be readily recognized by those ordinary skilled in the art as an alternative material choice for manufacturing.

13. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over.

Parks discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

Parks does not disclose specifically that an electronic device, such as a personal computer or TV, is using the liquid crystal display device, but it would have been obvious to one of ordinary skill in the art at the time when the invention was made that LCD devices are commonly used in a broad spectrum of electronic devices, including PCs and TVs.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaly in view of Yamazaki et al., ("Yamazaki"), US 5,349,366 (see IDS).

Kanaly discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

Kanaly does not disclose that ferroelectric memory can be used in the storage circuits.

Yamazaki teaches a storage circuit for LCD employing ferroelectric type of memory.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that the memory taught by Yamazaki can be applied for the storage devices of Kanaly, because it would allow rewriting only specified pixels as taught by Yamazaki and would also simply constitute an alternative choice of memory component in the pixel.

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15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaly in view of Fonash et al., ("Fonash"), US 5,945,866.

Kanaly discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

While Kanaly discloses that the circuits can be made on a glass substrate, it does not teach that a plastic substrate can be used instead.

Fonash teaches that the circuit of LCD can be made on either glass or plastic substrates.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that either substrate, glass and plastic, can be used for manufacturing the circuits, which will be readily recognized by those ordinary skilled in the art as an alternative material choice for manufacturing.

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaly in view of Johnson, US 4,752,118.

Kanaly discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

Kanaly does not teach that the components of LCD can be manufactured using stainless steel substrate.

Johnson teaches that the semiconductor circuits, including those for LCD, can be made using stainless steel substrates.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that any known type of substrate, stainless steel including, can be used for manufacturing the memory circuit of liquid crystal display device of Kanaly, it would be readily

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recognized by those ordinary skilled in the art as an alternative choice of material for manufacturing.

17. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaly in view of Kobayashi et al., ("Kobayashi"), US 4,432,610.

Kanaly discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

While Kanaly discloses that the circuits can be made on a glass substrate, it does not teach that a monocrystalline wafer substrate can be also used for that purpose.

Kobayashi teaches that the memory circuit for LCD can be made on monocrystalline wafer substrate (col.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made that monocrystalline wafer substrate can be used for manufacturing the memory circuits of Kanaly. This fact will be readily recognized by those ordinary skilled in the art as an alternative material choice for manufacturing.

18. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanaly.

Kanaly discloses a liquid crystal display device having a plurality of pixels having a plurality of storage circuits.

Kanaly does not disclose specifically that an electronic device, such as a personal computer or TV, is using the liquid crystal display device, but it would have been obvious to one of ordinary skill in the art at the time when the invention was made that LCD devices are commonly used in a broad spectrum of electronic devices, including PCs and TVs.

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19. Claims 46, 48, 49, 50, 52, 54 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama, US 5,798,746 (IDS) in view of Kanaly.

With respect to claims 46, 50 and 54 Koyama discloses a method of driving LCD, wherein the liquid crystal display device comprises a source signal driver circuit (FIG. 1) including a shift register (109, 110), a latch circuit (111, 112), a gate signal line driver circuit (104, 105), a plurality of pixel (123-133), the method comprising outputting sampling pulse from a shift register to the latch circuit, the latch circuit holding the digital image signal in accordance with the sampling pulse and writing it to the signal line (106), the gate signal line (104) outputting the gate signal line selection pulse and selecting gate signal lines sequentially from the first row, and in the plurality of pixels performing write-in of digital image signal sequentially from the first row (or arbitrary in the row selected by the gate line signal).

Koyama does not disclose that the digital image data is n-bit image data, wherein $n \geq 2$.

Kanaly teaches field sequential liquid crystal display device, wherein the digital image data written into pixels is 24-bit digital data for performing gray scaly display.

It would have been obvious to one of ordinary skill in the art at the time when the invention was made to use multi-bit data presentation taught by Kanaly in the display device driver of Koyama, because it would allow to realize higher quality gray scale color display.

As to claims 48, 49, 52 and 56, it would be known to the artisans of ordinary skill in the art at the time of the invention that the liquid crystal display devices are used in electronic devices, including such known devices as TV, personal computer etc.

20. Claims 47, 51 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama in view of Kanaly, and further in view of Okumura et al., ("Okumura"), US 5,945,972.

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Koyama and Kanaly do not teach that the method of driving display device further comprising, in a display period of still image, stopping the source signal line driver circuit and repeatedly reading the digital image signal stored in the storage circuit to display the still image.

Okumura teaches a liquid crystal display driving method using few memory circuits for each pixel in conjunction with memory selector (see FIGS. 3, 5 for example), wherein for the still image the frequency for writing into memory is lowered (stopped for a short period), because it can be reused if nothing is changed in consecutive frame (column 23, lines 23-34; lines 49-57).

It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply technique described by Okumura in the display device of Koyama-Kanaly, because it will reduce the power consumption during displaying the still picture (column 23, lines 53-57).

Double Patenting

21. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

22. Claims 21-45 and 59-60 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3-5 of copending

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Application No. 09/912,596. Although the conflicting claims are not identical, they are not patentably distinct from each other because, even though claims 21 and 23 of the current application are directed to LCD pixel-memory structure and claims 3 and 4 of copending application – to EL type of light-emitting display, the corresponding structures and functionality of their elements are exactly the same, and it would have been obvious to one of ordinary skill in the art at the time when the invention was made that similar element composition and functionality can be applied to any type of known matrix type of a display, the structure being factually independent from the display type. Claims 22 and 34 of the application correspond to claim 5, claims 23 and 35-36 to claim 6, claims 24 and 37 to claim 8, claims 25 and 38 to claim 9, claims 26 and 39 to claim 10, claims 27-30 and 40-43 to claim 11, and claims 31-32 and 44-45 are obvious over claims 12-13 of copending application respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Blalock et al., US 6,441,829 B1, discloses LCD having a digital pixel with M-bit storage circuits and driver.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Eisen whose telephone number is **(703) 306-2988**.

The examiner can normally be reached on M-F (9:00 a.m. - 4:00 p.m.).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard A. Hjerpe can be reached on (703) 305-4709.

Any response to this action should be **mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or **faxed to:**

(703) 872-9314 (for Technology Center 2600 only).

Hand-delivered responses should be **brought to:** Crystal Park Two, 2121 Crystal Drive, Arlington, Virginia, Sixth Floor Receptionist.

Any inquiry of a general nature or relating to the status of this application or proceeding should be **directed to:** Technology Center 2600 Customer Service Office, whose telephone number is (703) 306-0377.



Alexander Eisen
September 23, 2003